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TYPEWRITING OVER A TELEGRAPH WIRE

A New Machine Which Takes a
 Message and Delivers It
 at a Distance.

MUCH IS CLAIMED FOR IT

Would Be of Great Service to the Police
 and Fire Departments, the In-
 ventor Believes.

Seventy years ago Prof. Samuel Morse first conceived the idea of telegraphy. Five years after the invention the first public demonstration was given, and he used the same system that is in vogue to-day, namely, dots and dashes to represent letters and numbers and punctuation marks. Since then little improvement has been made. For the last forty or fifty years electrical engineers and scientists have evolved various machines to replace Prof. Morse's system and to quicken and cheapen the telegraph, at the same time insuring accuracy and doing away with the necessity of having two highly trained operators, which the telegraphing system requires. The Morse system of unrecorded sounds is still being used and is the basis of wireless telegraphy, without which it would be impracticable.

Recorded sounds would prevent the possibility of error in any shape or form, and this has been the goal of inventors—to manufacture a machine capable of recording or writing sounds. Working along these lines Prof. Elias Gray, a coinventor with Prof. Graham Bell of the telephone, placed a machine on the market capable of transmitting hand writing. But this machine was then more or less in its infancy and found to be incapable of standing up to serious tests of its efficiency.

With the advent of the typewriter and its firm hold on the public, electricians were set thinking of the practicability of using the typewriter for telegraphing. Machines were put on the market which claimed to do this, but up to a short time ago they were not adopted commercially.

Now, according to Dr. G. A. Cardwell, who has studied the question, he has invented a practicable machine capable of transmitting messages with accuracy and speed. Moreover, it is commercially useful and is already in use throughout the country.

These telegraphing typewriters are of a familiar pattern and resemble the ordinary every day machine with the exception that there is a round case on top which holds the special mechanism. As far as the operator is concerned the message is dispatched in the same way that a typewriter's run and all that is seen on the machine is the type wheel spinning to make the record.

In the same way as the telegraph, the American telegraph typewriter, as the machine is called, is worked over one or two wires, which may be either telephone or telegraph wires. In one of the places where the machine is demonstrated the invention is used in conjunction with both the telephone and the telegraph, and according to the officials of the company now exploiting the machine in New York communication may be established

by either or any of the three modes employed. Many claims are made by the inventors for this machine, among them being that as fast as the message is written on the transmitter it appears on the paper of the receiving machine connected with the transmitter. Not being a synchronous machine it is impossible for it to be "tapped" as the ordinary telegraph wires are. So far every method of printing telegraph that has been devised has required special conditions, such as a large number of wires or synchronism of field or a certain kind of electric current.

Dr. Cardwell is an expert on electrical matters, especially those relating to the telegraph and the telephone. He acted as adviser on electrical matters to the late Jay Gould, Tiffany, D. O. Mills and many other well known men. He is the inventor of the automatic telephone switch for the anti-induction cable; the selective telephone call and the automatic electric outout; the multiplex system of telegraphy, and many other inventions which have proved their merit.

The last twenty years or more he has been working to perfect a system of telegraph communication which would be one of exact letters and characters, visibly reproduced in both the sending and receiving offices. He believed an instrument was needed that would record messages on paper in the receiving office precisely as transmitted by the sender. The perfecting of a device of this nature involved



difficulties almost without limit, involved many sacrifices financially, involved the giving up practically of all of his time, so that he was almost eliminated from the time being from the social world; but with the determination characteristic of the inventor, he and his associates persisted in their investigations and experiments until they now claim that success has crowned their efforts.

The machine is so built that by the operation of the keyboard on the typewriter the message is transmitted and reproduced on any and all machines that may be attached on the circuit, or the message can be reproduced on one, two or more machines to the exclusion of the others when necessary. In other words, if attached to a telegraph wire between here and Detroit and a message was necessary to be sent to every agent in every office it could be sent simultaneously received by them and recorded, all in plain English; but, on the other hand, if the message was only intended for one of the operators to receive, by the simple turning of a switch every other machine could be cut out of the circuit.

A letter or character struck on a typewriter in the sending office is immediately recorded on the typewriter in the receiving office. This requires but one depression of the key, as against several muscular impulses necessary to send each character by the Morse system. The expert Morse operator sends about thirty words a minute, while the typewriter transmits messages more than three times as fast. Mistakes are eliminated, because the correctness of the message is not dependent upon the proper translation of a combination of sounds represented by dots and dashes ticked off in the receiving office.

If a mistake is made it will appear on the record in front of the operator, and by means of a back space adjustment the machine will move the message back to the error, the operator will then depress the letter X, mark out the mistakes and correct. Another advantage claimed for the telegraph typewriter is that it is proper against weather and atmospheric changes of any kind and requires no relay when working at a distance of 1,000 miles or less.

The inventor claims the device can be operated over telegraph or telephone wires (without disturbing the conversation going on over the telephone at the same time) or over any fire, police or messenger call wire, and is not even influenced by outside electrical conditions. By "tuning" the typewriters differently four machines can be put on the same wire and four different operators can send their messages all at once, it is said.

Speed in transmission is only one of the many advantages claimed for the new telegraphing instrument. Under the present system all messages must be translated from English into Morse before being sent and at the receiving end they must be retranslated and written into English. The telegraph typewriter does not require the presence of an operator at the receiving end and the sender can transmit messages as rapidly as a letter can be written on an ordinary typewriter.

If he is an expert Morse operator and the receiving operator happens to be just learning the business the Morse system is absolutely governed by the speed of the new operator. He can only take it just so fast, and the expert must telegraph slowly or the man will not be able to translate the message. With the telegraph typewriter the message is received without interruption and never stopped to have any part repeated. Any one, the inventor says, who can write a letter or message on an ordinary office typewriter can telegraph. The machine that is used as a receiving machine is also used as the sending machine by the turning of a key or switch.

The most important work of the railroad telegraph service is the train de-

partment, and here, Dr. Cardwell states, the machines will excel. Despite the utmost care observed in all train dispatching offices wrecks result from misread or misunderstood orders sent by the Morse system. Every railroad man has long yearned for some better and more reliable method of sending orders to station agents, engineers and conductors all along the line. The telegraph, it was thought, would largely replace the use of the telegraph in the matter of dispatching and moving trains. It has not done so. The method has been found to be unreliable and in case of a wreck no responsibility can be placed upon the proper employee.

Here, Dr. Cardwell says, the telegraph typewriter meets every need. The train dispatcher has the order fully and plainly written out before his eyes. He knows that the order is being reproduced with absolute fidelity at the point to which it is sent and that no misunderstanding or mistake can occur unless there is criminal carelessness on the part of the agent, engineer or conductor who receives it. It may be news to learn that the steam railroads alone handle on the business of the various companies with their own employees and on railroad wires between two and three times as many telegrams as all the twenty-five telegraph companies in the United States combined.

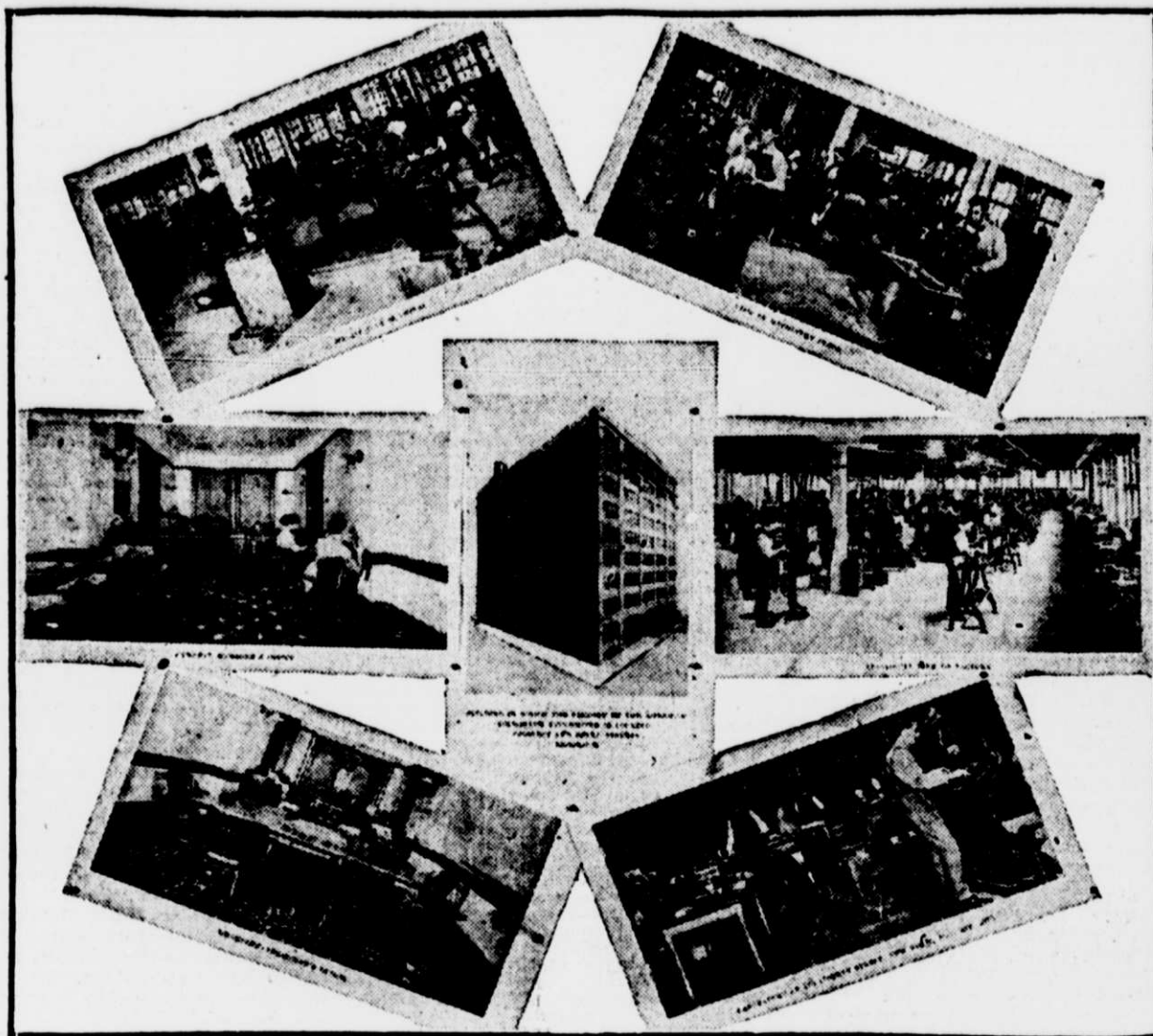
The newspapers too, with their loop wires running in, giving the news from their special correspondents and from all other sources, demand instantaneous service. With the telegraph typewriter at his elbow the editor would be in touch with the world. He could read the news as it comes in, hold the edition back to the last moment if the news warranted it, gain time and give the story to the public within a few minutes after it is

HOW FURS ARE TREATED.

A Keen Sense of Color Is Necessary for the Work of Grading Pelts.

The chief requirement for success in grading fur skins is an accurate eye for sense of color. The difference in value of the rarer varieties of fur skins, especially sables, natural black, silver and blue fox, sea otters, chinchillas, mink and some others, is so subtle that more than a practiced eye is necessary to judge accurately of the merits of individual skins. It is necessary that the color sense be highly developed.

The expert furrier must have, in addition to this, a thorough knowledge of the condition in which a skin should be to gain admittance into the highest class. A furrier must know by the appearance of the pelt whether it will turn out soft and strong after it has been dressed and whether the fur is in the best condition as regards strength and beauty. A fur skin must, of course, be treated more carefully and by a different process from that followed by the tanner of hides. Tannic acid would ruin the pliability of a fur skin, weaken and discolor the hair. The furrier's process is designed to retain the natural oil of the pelt, which in turn preserves the color of the fur and keeps it soft and pliable. The first step in this process is accomplished by placing the skin in an alkali bath. After



it has been softened in the bath the moisture is worked out of the skin with a blunt wooden instrument. Then the flesh side is drawn carefully back and forth over a straight edged knife, which removes any flesh that may be clinging to the pelt and also even it off.

Specially prepared grease is rubbed into the skin for softening purposes and the process is carried still further by placing the skin in a machine which is arranged to beat it softly until the grease has been entirely absorbed. A slowly revolving drum fitted with wooden paddles and containing fine hard sawdust, the kind of sawdust differing with the variety of fur, next takes charge of the pelt. A moderate degree of heat is supplied during this stage of the dressing. The skin is thoroughly cleaned of grease by this machine and the dressing is completed by tapping the skin with smooth canes, of a flexibility adapted to the strength of the fur, on a leather cushion stuffed with horsehair. Often a skin will be changed in shape and made smaller by the dressing process.

Sea and beaver skins require much more careful handling than other furs. In the case of these skins the water hairs, which are the hard top hairs of the pelt, have to be removed by hand. This process is more difficult with seal than with beaver. A number of men, each a specialist in his part of the work, are kept employed in the work. After this part of the dressing process has been completed the furs under wool, which is heavy and pale drab in color, is dyed dark brown. Several coats of this dark brown dye are applied, and the final result is a fur which is lustrous black on top. The skin is then submitted to the cleaning process again, made of an even thickness by emery wheels, and finally finished off in pale buff color.

The English dye for seal skin, which is considered the best, is a trade secret. Its principal ingredients are gallnuts, copper dust, camphor and antimony. It is supposed that the water used for the dye in London has a great deal to do with the fine results obtained by the use of this dye. The natives of different countries, using their own processes, obtain better results with some skins than with others, but the American furriers are rapidly coming to the front in handling the various kinds of pelts.

Wages in Hawaii.

From Consular and Trade Reports.
 At the beginning of 1912 various Hawaiian sugar plantations adopted a plan for the additional compensation of laborers working for wages, which has been styled the "sliding scale bonus." This is based on the New York market price for 95 degree raw sugar, duty paid.

If said market price averages for the year 3.55 cents per pound—\$71 per ton—laborers receiving \$24 per month and under are entitled to a bonus of 1 per cent. of their year's earnings, and for every \$1 per ton increase over \$71 per ton the bonus is increased 1 per cent., so that if sugar averages for the year 4 cents per pound—\$80 per ton—the bonus will be 10 per cent. of the year's earnings, and so on, with an increase of 1 per cent. for every \$1 per ton.

Two of the larger plantations have adopted this system to include all employees; another group has a true profit sharing system for men receiving \$50 per month and over and has applied the sliding scale bonus to all laborers receiving wages of \$50 per month and under. The basic rate under the wage system for plantation laborers is \$20 per month, but few are working at this rate, earnings varying from the minimum to \$30, while under contracts they make as high as \$40. In addition houses, fuel, food, medicine and medical attendance are furnished free of charge.

ONE WAY TO KILL 'EM.

Here's a Mosquito Slayer That Is Good as Far as It Goes.

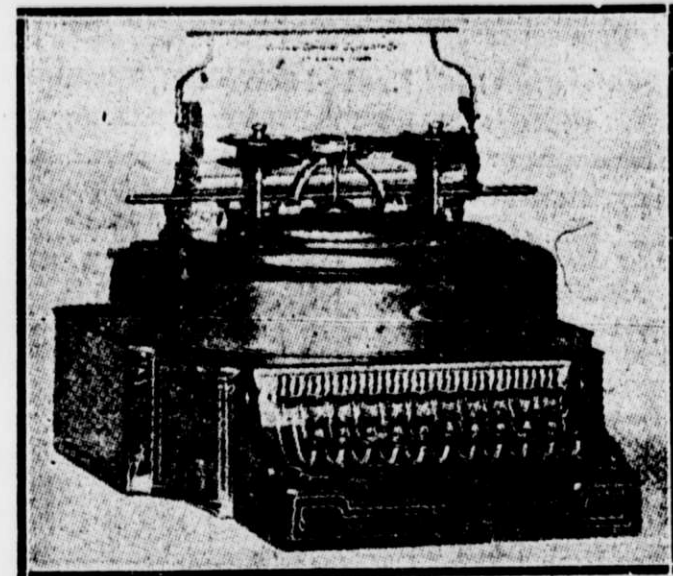
In a certain town not a hundred miles from New York city the inhabitants were much worried by mosquitoes and the riddance of the pest was one of the principal topics among the inhabitants. One day a notice appeared to the effect that any one desirous of an infallible method of killing the pest could by sending a quarter receive the information and the

paraphernalia for exterminating mosquitoes.

Nearly citizens thereupon sent the necessary silver and received a small package by return of mail. In the package were two boards marked "A" and "B," and on a slip of paper the instructions, which read: "First catch the mosquito, taking care not to crush him in the process, and then carefully place him on slab of wood marked 'A.' See that he does not attempt to fly away. Then with slab marked 'B' held in the other hand, bring it sharply down on slab 'A.' This guarantee will kill any mosquito."

American Telegraph Typewriter Co.

The American Telegraph Typewriter has come to stay. It is the completion of both the telegraph and telephone. It has the advantage of introducing itself to the world not as a new invention to be "tried out," but as something for which there is an immediate demand, that neither telephone nor telegraph can fill. It is attached to any ordinary telegraph or telephone line; is operated like an ordinary typewriter, and as the message appears upon the paper of the transmitting machine it simultaneously appears upon the paper of one or more receiving machines on the same circuit, as required.



Plain Type Now, Not Blind Signs

Since the invention of the telegraph in 1835 by Prof. Samuel F. B. Morse, inventive minds have striven, railroad and business men have hoped, for a machine that would instantly and automatically reproduce printed characters at both ends of or at any point upon a telegraph line—replacing the slow work of sending the Morse alphabet—a series of blind signals unintelligible to any one but specially trained experts, and requiring translation. Incorrect translation of the receiver's "dots" has often been costly. Over three hundred different models of printing telegraphs have been built—but either enormous cost, slowness of operation or limited radius prevented their commercial use.

Stands the Crucial Test

Inventors have spent years of toil and millions of money, knowing that success meant not only rich financial rewards, but also immortal fame. After the typewriter was perfected, efforts to produce a printing telegraph took the form of the typewriter; but until the American Telegraph Typewriter—the first printing telegraph typewriter ever invented—was produced, none were successful in standing the crucial commercial test—OPERATION OVER LONG DISTANCES. The most successful printing telegraph before the perfection of the American Telegraph Typewriter was what is known as the "Vulcan," used principally for stock quotations, but it is slow, requires a great amount of electrical energy, and can only be operated over comparatively short distances. EVEN WITH ALL THESE DEFECTS, IT HAS PROVED A VERY LARGE PROFIT MAKER TO INVESTORS IN ITS STOCK.

Results of 32 Years' Study

It was Dr. George A. Cardwell, the noted practical electrician, with wide experience in telegraphy and telephony, who finally solved the problem of devising a practical and perfect machine—ONE THAT CONFORMS TO EVERY REQUIREMENT OF COMMERCIAL USE. His labors in perfecting this machine, the American Telegraph Typewriter, have covered the last thirty-two years.

This machine does not differ materially in appearance from the ordinary commercial typewriter, is about the same size, has the standard keyboard, and sends messages any distance which the telegraph or telephone can cover.

"Look" not "Listen"

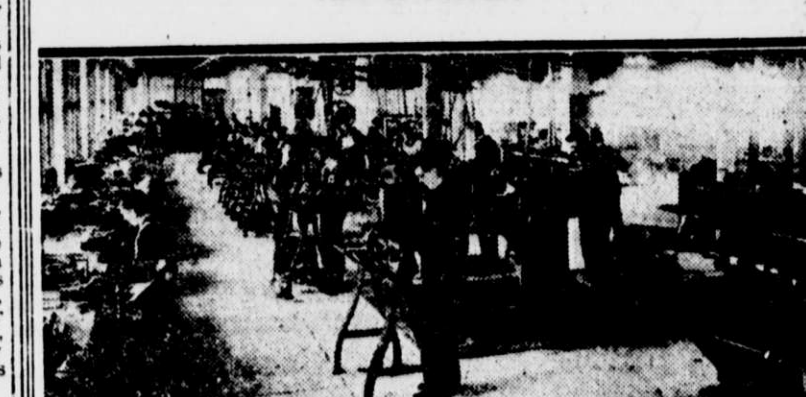
Until to-day telegraph operators always received messages by sound—that is by "listening" to the taps as the dots and dashes are ticked off by the sender. By the car, not by the eye. Now we have changed all that. The only PERFECT telegraph operator, THE AMERICAN TELEGRAPH TYPEWRITER, makes the modern motto for all telegraphers, "LOOK," not "listen."

Haste That SAVES Waste

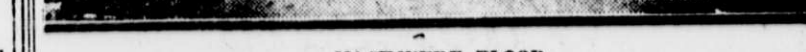
With its visible writing, the American Telegraph Typewriter prints the message before your eyes in plain type, IN LESS THAN HALF THE TIME required by the Morse system.



VIEW OF FACTORY.



MACHINERY FLOOR.



Work and Words Agree

Mr. L. S. Wells, after more than a year's use of it on the Pennsylvania's Long Island Division, writes: "The system will prove a most valuable substitute for present methods, and its use will be many times greater than that of the Morse system." Mr. J. A. McCarty, of the Suburban Motor Transit Co., made for a Savings Bank President who employed him as an electrical expert, a special investigation of the Telegraph Typewriter, and reported so favorably that the bank President and a number of his friends are stockholders in our company. In this report Mr. McCarty says among other things:

"I am of the opinion that it is the greatest electrical invention of the century." "I believe this will be a special money maker." "It is a highly commercial machine... a record... absolutely reliable."

The fact is that this is the ONLY "page printer," the ONLY printing telegraph that is practical for both long and short distance and for universal commercial use.

Handled Heaviest R. R. Work

The American Telegraph Typewriter did not achieve its present position and demand merely by being exhibited, or "demonstrated." As before stated, it has for over a year done its regular daily work for the Pennsylvania Railroad Company, between Flatbush and Long Island City on the Long Island Division, where there is the heaviest volume of traffic. That it proved itself is shown by the fact that we are now finishing for the Pennsylvania additional machines, which will be among the next deliveries.

Among Its Users

Other deliveries, as fast as the factory can finish machines, will be to those who have seen the work and placed orders. Among these are:

New York Central Railroad
 Delaware, Lackawanna & Western Railroad
 Southern Railway
 The Southeastern Line
 General Railway Co.
 Baldwin Locomotive Works
 Carnegie Steel Co.
 Hudson & Manhattan R. R. Co.
 (Madison Tunnel)
 Interurban Co.
 Gimbel Brothers' New York and Philadelphia
 Interurban Telegraph New York Co., Philadelphia

Main Office: 27 WILLIAM STREET, New York
 Factory: PROSPECT & PEARL STREETS, Brooklyn

**The Rice
 Gas Engine Co.**
 71 Broadway
 New York

**Works
 Bordentown
 New Jersey**